Faculty Working Papers

NEW ISSUES REVISITED

Frank K. Reilly

#409

College of Commerce and Business Administration
University of Illinois at Urbana-Champaign

FACULTY WORKING PAPERS

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June 16, 1977

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During the early 1970s several studies examined the relative rates of returns received by investors who acquired unseasoned new issues during the 1960s (new stock issues of firms previously not public). This study examines the results for about 500 new issues sold during the period 1972-1975. The results confirm the prior conclusions that underwriters tend to underprice those issues, but also indicate that the market is very efficient in adjusting for the underpricing.

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INTRODUCTION

During the late 1960's and early 1970's there was substantial interest in initial public offerings of common stock - i.e., the sale of common stock to the public by companies that previously were closely-held and did not have a public market for the stock. Because of investor interest in these issues numerous firms took the opportunity to float new issues. A tabulation of the number of unseasoned new issues registered with the SEC is contained in Table 1. As can be seen, the number was substantial and peaked in 1972. During this period several studies examined the pattern of price changes following the initial offering to determine the relative rates of return derived by investors in new issues during various time periods after the offering. The results for these several studies which are discussed subsequently show that for the period 1960-1970 the very short-run returns (one week and one month after offering) were generally superior to aggregate market returns, while longer-run returns for investors who acquired the issues in the after-market were consistent with risk. Notably, all the studies of the performance of new issues generally cease with data from the late 1960's or early 1970's (one study goes to October, 1970). Therefore, the purpose of this study is to update the prior studies using data from the 1970's beginning with 1972 and extending into 1975. This sample period is useful because it includes a period of rising prices (1972), followed by a period when stock prices declined consistently (1973-74). Therefore, it is possible to examine overall performance, and also the price performance of new issues during alternative market periods.

*The author acknowledges the assistance of Kent Adams, Paul Skelton, and the comments of Alan Hess.

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The initial section discusses why one might expect abnormally high returns on initial public offerings of common stock. Put another way, this discussion considers why one should expect underwriters to underprice unseasoned common stock issues. The subsequent section contains an extended discussion of all the previous studies on the relative performance of unseasoned common stock issues after the offering. The results are noteworthy because of the consistency that is found even though the techniques and time periods vary substantially. The third section discusses the details of the current study including the sample, time period, and market adjustment technique. The results are reported and discussed in section four. The final section contains a summary and conclusion and discusses the implications of the results.

EXPECTATIONS REGARDING RETURNS ON UNSEASONED COMMON STOCK ISSUES

It is felt that investors should expect abnormally high returns from the investment in unseasoned common stock issues compared to returns from seasoned outstanding issues. There are two major reasons for this expectation. The first reason is that one might expect underwriters to have a downward bias in their pricing of new common stock issues. Such underpricing would lead to superior returns in the very short-run as investors adjust for this bias. The second reason to expect higher returns is the higher risk of these stocks.

Underwriter Pricing Strategy

One might expect a downward bias in the pricing of new stock issues by underwriters for the following reasons:

1) Because of the unseasoned nature of new issues, the underwriter is uncertain of the public's evaluation of the firm's past earnings stream and the corporation outlook.
2) The underwriter will tend to underprice the issue in order to ensure a "successful" issue. In this context "successful" is defined as an offering that is quickly sold, is possibly oversubscribed, and enjoys some increase in price soon after the offering. Such an offering results in satisfied customers for the underwriter as well as satisfied corporate stockholders.
3) A "successful" issue sells quickly which is important to the underwriter since he must borrow large amounts to purchase the issue. Investment banking firms have relatively small capital bases for the amount of underwriting undertaken and are, therefore, heavily dependent on rapid turnover of their capital. Rapid turnover, in turn, is contingent upon quick sales of all issues, especially new issues that are the high risk segment of the underwriting business.
4) Under SEC supervision underwriters are permitted to purchase and sell a new issue to stabilize the price. This stabilizing action is desirable because it reduces unnecessary price fluctuation but is time consuming and ties up underwriting capital. Such stabilizing action is minimized by a "successful" issue that does not require support.
5) In some cases the underwriters for new issues receive part of their fee in stock or receive options to purchase a block of the new issue stock at the original offering price. Therefore, they benefit directly from a "successful" issue.

The only constraint to the underpricing of a new stock issue is the possible complaint by the issuing corporation that it could have received more capital from the issue. Such concern is minimized by the following:

1) The new stockholders are satisfied with their purchase of the "successful" issue.
2) The corporate officers, like the underwriters, often receive stock options with prices close to the original offering price. Given these options, they likewise benefit directly and immediately from a "successful" issue that rises to a premium.
3) Corporations do not attempt to fulfill all of their planned capital needs in the initial offering. They know that they can float future stock issues at a higher price to a satisfied stockholder group.

Differential Risk in New Issues

Although it is not necessary that a new stock issue be issued by a new company, this is typically the case. As such, the investor in new stock issues is not only acquiring an unseasoned stock but is also acquiring a relatively unseasoned firm. The initial stage in a firm's life cycle sometimes labeled the "pioneering" stage is characterized by rapid growth, but also the firm is plagued by heavy competition during this period and there is a high probability of bankruptcy during this phase of the life cycle. Given this greater uncertainty of success or failure an investor should require and receive a higher than normal rate of return on the stock issues of these new firms.

The study is concerned with determining whether there are abnormal returns immediately after the offering. Given the presence of abnormal returns, there is an attempt to determine what portion of these abnormal returns are because of underpricing by the underwriters, and what portion is due to the higher risk of the new issues relative to the market index.

PRIOR STUDIES ON UNSEASONED NEW ISSUES

New Issues in a Rising Market

A study by Reilly and Hatfield examined the relative performance of 53 new issues sold during the period December, 1963 to June, 1965.[1] The performance was tested by examining percent price changes for the sample of new issues compared to percent price changes in the Dow-Jones Industrial Average (DJIA), the National Quotation Bureau Over-the-Counter Industrial Average (OTCIA), and a randomly selected sample of over-the-counter stocks. The comparisons were made for three periods of time: 1) from the offering to the first Friday following the offering, 2) from the offering to the fourth Friday following the offering, and 3) from the offering to the Friday one year after the offering.

The DJIA and the OTCIA were employed because prior studies have indicated that short-run, as well as long-run changes in the price indicator series for the New York Stock Exchange did not conform to similar changes for the major price indicator series for the over-the-counter market.[2] Notably, all the new issues were initially traded on the OTC market and typically continue on the OTC during the first year. Therefore, given this trading pattern and because of the differences in price movements for the alternative market segments, it seemed appropriate to compare the new issues to an OTC market

[1] Frank K. Reilly and Kenneth Hatfield, "Investor Experience with New Stock Issues," Financial Analysts Journal, Vol. 25, No. 5 (September-October, 1969), pp. 73-80.

[2] An examination of short-run price changes is contained in, Frank K. Reilly, "Evidence Regarding a Segmented Stock Market," Journal of Finance, Vol. 27, No. 3 (June, 1972), pp. 607-625. Long-run price change differences are examined in Frank K. Reilly, "Price Changes in NYSE, AMEX and OTC Stocks Compared," Financial Analysts Journal, Vol. 27, No. 2 (March-April, 1971), pp. 54-59.

indicator series. Further justification was derived from correlations of monthly percent price changes for each new issue with percent price changes for the DJIA and the OTCIA. The new issue - OTCIA correlations were usually substantially higher than the new issue - DJIA correlations.

The use of the OTC series also contributes to the solution of the risk differential problem. As noted, most unseasoned new issues are sold by relatively small new firms which should be higher risk than the blue-chip companies whose stocks are included in the DJIA. While the 35 OTC stocks included in the NQB Average are considered the blue-chips of the OTC market, they obviously are closer in risk to the new issues than the DJIA.

The individual new issues were examined relative to randomly selected individual OTC stocks because the stocks in the NQB are OTC blue-chips. Therefore, it was felt that there still remained some risk difference that should be considered.

The results were examined in terms of the number of new issues that outperformed the alternative market indicator series, and also the extent of the performance. Regarding the performance in terms of the number of new issues, one would expect that without underpricing half the new issues would outperform the two market indicator series - i.e., this is what one would expect with a randomly selected sample. Alternatively, if there is consistent underpricing one would expect significantly more than half the new issues to outperform the market series. The results for the number of new issues did not support the underpricing hypotheses - just about half the new issues did better than the market series.

The results in terms of the size if the relative gains and losses did support the underpricing hypothesis. Specifically, about half the new issues did not do as well as the market, but the relative percent losses were small. In contrast, the relative gains for the new issues that outperformed the aggregate market were substantial. As a result the average percent price change for the total sample of new issues

was significantly greater than the average price change for the two market indicator series as shown in Table 2.

The comparison of the new issues and randomly selected stocks generated approximately the same results. Again, in terms of the number of issues there was no difference in performance. As before, the losses of the new issues relative to the randomly selected stocks were rather limited, while the relative gains were substantial for those new issues that outperformed randomly selected OTC stocks. As a result, the average price change on the new issues was substantially higher than the average price change for the randomly selected OTC issues as shown in Table 2.

New Issues in a Declining Stock Market

Because the time period covered by the initial study was mainly a period of rising stock prices, it was considered appropriate to examine the performance of new issues during a period of generally declining stock prices. A second study examined relative performance of 62 new issues sold just prior to the 1966 market decline.[3] Therefore, the performance of the new issues during the year after the offering would be affected by the market decline. A summary of the average results for the new issues, the market indicator series, and a randomly selected sample are contained in Table 3.

The results contained in Table 3 generally confirmed the results of the prior study. As before, the number of new issues that outperformed the market or the randomly selected OTC stocks was as expected (approximately one-half).

[3]Frank K. Reilly, "Further Evidence on Short-Run Results for New Issue Investors," Journal of Financial and Quantitative Analysis, Vol. 8, No. 1 (January, 1973), pp. 83-90. A study by Brown considered what happened to the firms that issued new stock during good and bad market periods, but there is no consideration of the short-run returns on the stocks. J. Michael Brown, "Post-Offering Experience of Companies Going Public," Journal of Business, Vol. 43, No. 1 (January, 1970), pp. 10-18.

Again, the difference was in the extent of price change -- the new issue losses were relatively limited, while some new issues that did well, did very well. As a consequence the average price changes for the new issues were clearly superior to the price changes for the overall market and the randomly selected OTC stocks.

Because the period of market decline was relatively short (eight months from February, 1966 to October, 1966), the short-run results were prior to the market peak, therefore the short-run results were during a rising market. The short-run results were almost identical to the prior study results and showed that the returns in the very short run (the Friday after the offering) were significantly above the market averages. During the first month after the offering there were further increases in the market averages and continued superiority for new issues.

The long-run results were heavily influenced by the declining stock market but still supported the basic hypothesis that investors in new issues enjoyed superior returns relative to the overall market. While the new issue price changes were not as large as in the earlier study, the absolute percent spread between price changes for the new issues and the price changes for the alternative market series were about the same as in the prior study.

The performance of the new issues compared to the randomly selected OTC stocks were likewise consistent with the prior study results. Specifically, while only about half the new issues outperformed the randomly selected stocks, the average price change for the new issues was consistently much larger than the average price change for the randomly selected stocks.

New Issue Price Adjustment

All the evidence thusfar has been concerned with price changes from the offering price to subsequent periods after the offering. Several observers have noted that the returns referred to in the studies may be correct in theory, but they are almost certainly not generally available in practice. It is contended that most investors do not have the opportunity to acquire all the new issues, simply because they don't deal with all the brokers involved. Further, even if the broker were known, unless the investor were a preferred customer, it is unlikely he would be able to get an equal amount of all new issues at the offering price. To examine the effects of such a potential bias, Reilly repeated the prior tests using new issue prices subsequent to the offering price.[4] This post offering price would be one that is supposedly available to everyone for a minimum of 100 shares. To determine the effect of acquiring new issues in the "after market" it was assumed that all the new issues (the 53 during the rising market and the 62 prior to the declining market) were acquired on the first Friday and the fourth Friday after the offering and were held until the Friday one year after the offering. These results were compared to the price changes for the market indicator series and the randomly selected OTC stocks under the same assumptions. A summary of the results is contained in Table 4.

As before, the average price change for new issues was always greater than the price changes experienced by either of the market indicator series, but the differentials were definitely reduced. The new issue price changes were also better than that experienced by randomly selected OTC stocks except in the case of a purchase after the first Friday during a rising market. These

[4]Frank K. Reilly, "Further Evidence...," Ibid.

results assuming the purchase of new issues in the secondary market after the offering would not alter the prior conclusions, but this assumption did reduce the magnitude of the superior price changes. These results are consistent with the notion of an efficient stock market where stock prices adjust rapidly to new information (i.e., the underpricing of new issues).[5]

Stoll and Curley Study of New Issues

A study by Stoll-Curley was primarily concerned with the adequacy of equity capital for small businesses.[6] They analyzed this question through an examination of short-run and long-run returns for a sample of 205 Regulation A offerings by firms that sold stock for the first time during the calendar years 1957, 1959, and 1963. The rates of return for the new offerings were compared to the rates of return for the Standard and Poor's 425 Industrial Average during three time periods as follows:

1) The time period between the date of the offering and the first market price quotation. The first market quotation was either the first March or September price quotation after the offering. This short-run period was typically much longer than the short-run used in the previous studies discussed where the periods were either less than one week or less than a month.
2) The time period from the time of the first market quotation as defined above, to the last market price quotation available. These time periods always covered several years.

[5]For an extensive discussion of efficient markets and alternative tests see, Eugene F. Fama, "Efficient Capital Markets: A Review of Theory and Empirical Work," Journal of Finance, Vol. 25, No. 2 (May, 1970), pp. 383-417.

[6]Hans R. Stoll and Anthony J. Curley, "Small Business and the New Issues Market for Equities," Journal of Financial and Quantitative Analysis, Vol. 5, No. 3 (September, 1970), pp. 309-322.

3) The entire time period available, from the offering date to the last market price quotation available. Again, this time period was generally quite long.

The short-run results were quite consistent with prior tests.

In the short run, the stocks in the sample showed a remarkable price appreciation. Between the initial offering date and the first market date, the average 6-month rate of return for all companies in the sample, over and above the 6-month rate of return on the Standard and Poor's Index, was 42.4 percent. On the average, an investor would have done almost 50 percent better per 6-month period by buying new small issues at the offering price than by investing in a portfolio of larger stocks.[7]

Not only were the results superior but there was consistency -- only 25 percent of the new issues failed to appreciate during this initial period. It was further pointed out:

> The same results in more extreme form are observed if the immediate price change over the offering price is observed at the date of the completion of the offering. Of the 169 companies for which market prices were available near the completion of the offering, only 21 had prices lower than the offer price. The average price realtive is 1.753, an immediate average appreciation of 75 percent. This result is observed despite the fact that during the offering periods observed the Standard and Poor Index decreased slightly on average.[8]

[7] Stoll and Curley, Ibid., p. 314.

[8] Stoll and Curley, Ibid., p. 314.

Therefore, it appears that the Stoll-Curley results clearly confirm the prior results that indicate superior short-run returns on new issues.

McDonald and Fisher Study

A study by McDonald and Fisher examined the returns for 142 new issues brought to the market during the first quarter of 1969.[9] They analyzed the returns for the new issues relative to the OTCIA during the following five time intervals:

0 - 1: Offering to first published market price in first week

1 - 3: First week to one year after offering

0 - 2: Offering to one month after offering

2 - 3: One month to one year after offering

0 - 3: Offering to one year after offering

The results indicated that the mean excess returns (the excess return was defined as the return on the new issues minus the return during the period for the OTCIA) were significantly positive (28.5 percent) for the period 0 - 1 -- from the offering to the first published price. This is consistent with prior results that show very high short-run returns. There was also further excess returns (6 percent) during the period from the first week after the offering to the month after the offering.

Subsequent returns from the first month after the offering to the end of the year were negative. The authors attributed these negative excess rerturns to the fact that the period examined was one of sharply declining stock prices and one might expect new issues to be more volatile than the

[9] J. G. McDonald and A. K. Fisher, "New-Issue Stock Price Behavior," Journal of Finance, Vol. 27, No. 1 (march, 1972), pp. 97-102.

aggregate market -- therefore, the new issues would increase more than the market during a period of rising stock prices, and decline more than the market during a period of falling stock prices.

In contrast to this line of reasoning it is contended that these negative excess returns were attributable to the fact that the only comparison made by McDonald and Fisher was against the OTCIA compared to the Reilly-Hatfield and Reilly studies that considered the DJIA, the OTCIA, and a random sample of OTC stocks. The limited comparisons by McDonald and Fisher was especially unfortunate for the period of their study since it was a period of generally declining stock prices that was not reflected by the OTCIA. Specifically, during the period of their study (January, 1969-March, 1970), the DJIA declined over 17 percent, the Standard and Poor's 425 Industrial Index declined 13 percent, the NYSE Composite Index declined about 24 percent, a randomly selected sample of OTC stocks declined by more than 30 percent, while the OTCIA declined by only 3 percent. Obviously, during this period the performance by the OTCIA (composed of 35 blue-chips stocks on the OTC) was not consistent with the other segments of the stock market or the great bulk of OTC stocks. Therefore, the negative excess returns reported by McDonald and Fisher were probably due to the use of a poor base of comparison. Clearly, the results for the full period would have been substantially different if they had used almost any other market series for comparison. Even with a more justifiable base the returns after the first month probably would have been substantially lower than the very short-run returns derived during the first week and the first month and still would have indicated the existence of a fairly efficient market.

Logue Studies

There have been two studies on the premiums on unseasoned new issues by Dennis Logue. Both studies examined the performance of 250 new issues sold during the period 1965-1969. In one of the studies there is an analysis of the relative returns from the offering price to the first available price during the month following the offering.[10] All prices are adjusted for market returns during the comparable period as determined by the National Quotation Bureau Industrial Average for 35 OTC stocks (i.e., the OTCIA referred to earlier). The results indicated that the average excess returns during the first month was approximately 42 percent for the 250 issues. Over the immediate post-offering period, only 55 of the 250 issues in the sample declined relative to the market and only 50 declined absolutely. Based upon these results it is stated:

> The evidence strongly suggests that the observed premia are not accidental but rather that they are planned.[11]

The remainder of the article is concerned with an analysis and discussion of the differences in premia on new issues underwritten by prestigious investment banking firms and non-prestigious investment bankers. Of the 250 issues 83 were underwritten by prestigious investment bankers and 167 by non-prestigious firms. The average excess returns on the issues underwritten by prestigious investment firms was about 21 percent, while the average excess returns for issues underwritten by non-prestigious firms was 52 percent. It is concluded after an extensive discussion that this differential is mainly

[10] Dennis E. Logue, "Premia on Unseasoned Equity Issues," Journal of Economics and Business, Vol. 25, No. 3 (Spring-Summer, 1973), pp. 133-41.

[11] Ibid., p. 134.

because of the limitation on cash compensation by the underwriter. This limitation is specified as a percent of the value of the offering (about 15-20 percent) and is more restrictive for the small issues underwritten by non-prestigious investment bankers. As a result the non-prestigious underwriters compensate by pricing the issues at a higher discount from equilibrium and derive non-cash benefits.

The other study by Logue is an extensive analysis of several factors that could explain the size of the premium in addition to the prestige of the underwriter.[12] The variables considered and the expected relationship with the post-offering premium were as follows:

1. The number of competing issues during the month (+)
2. Current market conditions during the month of the offering and the prior month (+ for both months)
3. Whether the issue is labeled as speculative or not (+ if speculative)
4. The percent cash compensation for the underwriter (-)
5. The noncash compensation - mainly stock purchase warrants (+)
6. Total dollar value of offering (-)
7. The percent of shares which are a secondary (-)
8. The percent of the offering used to retire debt (+)
9. Underwriter prestige (-)
10. Risk measured as standard deviation of weekly price relatives (+)

The results indicated that the state of the market was significantly positive as hypothesized--i.e., the excess returns are larger during rising

[12]Dennis E. Logue, "On the Pricing of Unseasoned New Issues, 1965-1969," Journal of Financial and Quantitative Analysis, Vol. 8, No. 1 (January, 1973), pp. 91-103.

markets.[13] The value of the offering was significant and negative as expected and so was the coefficient that indicated what proportion of the offering was a secondary. The cash compensation coefficient was negative and almost significant. The underwriter prestige coefficient was not significant even though the average returns were very different (21 vs 62 percent). A breakdown in the sample by underwriter provided additional insight regarding what motivates the two groups.

Neuberger-Hammond Study

A study by Neuberger and Hammond examined in more detail the influence of underwriters on the premiums received on new issues.[14] The authors examined the excess returns on unseasoned new issues from the date of issue to one week following the issues; from date of issue to one month following the issue and from one week to one month after issue. The sample considered 816 new issues during the period 1965-69. The average excess return above the OTC market return during the first week after the offering was 17 percent while the average excess return during the month after the offering was 19 percent. These results are consistent with all other studies in that they indicate above normal returns in the short-run. Also, the excess return from the first week to the first month was less than 1 percent which is consistent with an efficient market.

The authors divided the total issues into those that were completely

[13]This is generally consistent with the results in Reilly, "Further Evidence...," Op. Cit.

[14]Brian M. Neuberger and Carl T. Hammond, "A Study of Underwriters' Experience with Unseasoned New Issues," Journal of Financial and Quantitative Analysis, Vol. 9, No. 2 (March, 1974), pp. 165-177.

secondaries (all proceeds accrue to selling stockholders), and those that were primary and partly secondary. The excess returns on the completely secondary issues were only about half as much as the excess returns on the primary issues (i.e., about 11 percent versus 22 percent).

A major part of the study examined the differential performance of the new issues for 48 different investment banking firms that were active underwriters--especially in new issues. Notably, even for individual underwriters, none of them had negative excess returns during the first week after an initial offering. During the first week the excess returns for alternative individual underwriters ranged from about 38 percent to 1 percent. During period two (offering price to one month after the offering) the range for alternative underwriters was from - 9 percent to 45 percent and only two investment bankers had a negative average. Finally, during the third period from one week to one month, about half the underwriters had positive excess returns and half had negative. On the basis of tehse results the authors state:

> "... the investor should consider the underwriter of a new issue because the price appreciation is significantly different among underwriters."[15]

Finally, the authors divided the 48 underwriters into a group of 25 prestigious investment bankers and 23 non-prestigious bankers using the breakdown by Hayes.[16] The results indicate that the excess returns for the issues underwritten by the prestigious investment bankers was definitely

[15] Ibid., p. 169.

[16] S. L. Hayes, III. "Investment Banking: Power Structure in Flux," Harvard Business Review, Vol. 49, No. 2 (March-April, 1971), pp. 136-152.

lower than the returns on issues by the less prestigious underwriters. These results are consistent with those by Logue.

Ibbotson Studies

The most recent studies on new issue performance have been by Roger Ibbotson and by Ibbotson and Jaffe. The first paper by Ibbotson is most relevant to the current study because it examines the initial and after-market risk-adjusted returns on unseasoned stock issues during the period 1960-69.[17] In contrast to other studies that examined numerous issues sold during a given period, this study examined one offering, selected at random each month, from the universe of unseasoned SEC registered offerings. The author contends that this technique eliminates dependencies from identical time periods. Each issue is followed for a period of up to 60 months after the offering except for those at the end because the quotes are ended in 1971. After the offering subsequent quotes are month-end bids from the Bank and Quotation Record. The author employed a form of the capital asset pricing model to adjust for market movements and used an equally weighted arithmetic average of returns on the NYSE as the estimate of market returns. Because of inactive trading in many new issues it was felt that many new issue bids might be out of date so the market model considered market returns during period t and period t-1. Because the market model was specified in excess return form, the intercept for the first month's performance should equal zero if the new issues were not underpriced.

The initial performance considered what happened from the offering pric to the end of the first month which could be less than a month. The interce

[17] Roger G. Ibbotson, "Price Performance of Common Stock New Issues," Journal of Financial Economics, Vol. 2, No. 3 (September, 1975), pp 235-272.

for this regression was 11.4 percent with a t statistic of 3.45 - highly significant. An analysis of the initial performance for individual issues indicated that the excess returns were positive in 66 of the 112 cases and the distribution was highly positively skewed - an investor is more likely to get a large positive return than a large negative return. Following further tests of significance the author concludes that the initial mean performance is clearly positive. In fact it is stated:

> The large magnitude of initial performance makes us suspect that it would be uncovered even with far simpler models. ... the finding that initial performance is positive is robust to almost any reasonable model formulation.[18]

The author considers the aftermarket performance using the market model. It is contended that if the market is efficient the intercept should not be different from zero. The mean value of the intercept is positive, but only 53 percent of the individual observations are positive. It is concluded that, "the second-month performance taken by itself is not statistically significant."[19] At the same time, based upon subsequent performance of the new issues it is concluded that there is no evidence that the positive performance during the first month (i.e., from the offering to the first month), is ever erased in the second month or subsequent months. Subsequently, the author considers what happens assuming new issues are purchased at the beginning of the second month and held to the end of the sixth month. The mean performance is a positive 3.5 percent per month and the value is

[18] Ibid., p. 250.

[19] Ibid., p. 250.

statistically significant, but again the distribution is highly skewed - 57 percent of the residuals are negative. Other aftermarket periods also give positive alphas which would indicate inefficiencies. When these excess returns are considered with transactions costs that range from 6.3 to 7.3 percent, none of the single month performances are above this magnitude. At the same time, the geometric mean returns for various holding periods indicate that there are positive excess returns after transactions cost for holding period 2-6 (second month to sixth month) and 3-6, but negative returns after costs for periods 4-6, 5-6, and 3-4.

The author also considered the systematic risk for the new issues and concluded that the systematic risk for the new issues during the initial months was substantially greater than the risk of the market portfolio (the values are approximately 2.2 during the first month and 2.0 during the second month after offering). These estimates of systematic risk are probably consistent with expectations.

There was also an analysis of whether the systematic risk of new issues declines with seasoning. Based upon several tests it is concluded that:

> ... systematic risk tends to drop for those issues that remain in the sample.[20]

Hot Issue Markets

A study by Ibbotson and Jaffe considered the specification and prediction of "hot issue" markets, but also considered the overall performance of new issues during the period after initial offering.[21] Hot issue markets are

[20] Ibid., p. 261.

[21] Roger G. Ibbotson and Jeffrey F. Jaffe, "Hot Issue Markets," Journal of Finance, Vol. 30, No. 4 (September, 1975), pp. 1027-1042.

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[20] Ibid., p. 261.

[21] Roger G. Ibbotson and Jeffrey F. Jaffe, "Hot Issue Markets," Journal of Finance, Vol. 30, No. 4 (September, 1975), pp. 1027-1042.

defined as periods in which the average first month performance of new issues is abnormally high. The new issue performance during a month is computed by comparing the return for the new issue from the date of issue to the end of the month of issue and subtracting the price change for the S&P 500 Index during the same period. Notably, the initial period performance will be a maximum of one month and can be considerably less. Performance during subsequent months are for full months and are likewise compared to the S&P 500. It is contended that this technique is less precise than the market model used by Ibbotson but is is justified based on the Ibbotson results which indicated little relationship between the new issue returns and market returns. As noted, the authors define a hot issue month as one where the average return or new issues is above the median excess return. For our purposes, it is notable that the median excess return during the first month after issue for the 142 months analyzed was between 11.9 percent and 16.44 percent. Given such a median return, one would expect the average to be above this because all these distributions have consistently been highly skewed to the right. As it turned out, the average excess return overall new issues was 14.03 percent.

The analysis of new issue performance by calendar months over time indicated that there is significant serial dependency in the new issue premium received. This is confirmed using serial correlation tests and runs tests. The results also indicated dependency in the aftermarket.

The authors considered the relationship between the premium during the first month after issue and the relative performance during the second month. The regression results indicated a significant positive relationship

which suggest that the abnormal performance during month one is not erased during month two. In fact, one might postulate a positive relationship in abnormal performance. The results of an analysis of the relationship between the number of new issues during a month and the premium during that month indicated no relationship. Also, there was not a relationship between returns for the aggregate market (current and previous) and new issue premium. Apparently the market index cannot be used as a guide for selecting a month to buy or sell new issues.

Summary of Prior Study Results

Clearly the most important result that was substantiated by all the studies was that on average new issues yield abnormally positive returns and most authors attribute these excess returns to underpricing by the underwriters. Specifically, the average market adjusted excess returns are always positive for shortrun periods such as a week and a month after the offering. In addition, it appears that the size of the excess returns vary over time depending upon the general state of the market. Further, although the aftermarket is generally efficient, the initial excess returns are not offset or eliminated. Beyond the time factor, the new issue premium varies by individual underwriters, with a clear difference between a group of prestigious underwriters and a group of non-prestigious investment bankers. Finally, although the general technique used to adjust for the market impact was consistent (or not considered to make any difference), the specific market indicator series used varied from an arithemtic average of all stocks on the NYSE, to the S&P 500 Index, to the DJIA, and finally the NQB-OTC Average. Given the acknowledged difference in size and risk of new issue stocks compared

to stocks on the NYSE, the difference in returns over long periods could be substantial. The same may be true for the NQB Average which is composed of 35 OTC blue-chip stocks.

CURRENT STUDY

Time Period

As stated in the introduction, one of the prime purposes of this study is to update the prior results for the post-1970 period because all the previous studies were heavily concentrated in the 1960's with the emphasis on the latter half of the decade. Specifically, the sample for this study was drawn from the period 1972-75 when possible. Clearly the bulk of the sample is from 1972 with a declining number each year because of the severe decline in new issues registered during each succeeding year (see Table 1) The specific sample was derived from the section entitled, "New Issues" in the Over-the-Counter Market Chronicle which is a subsidiary publication of the Commercial and Financial Chronicle published by William B. Dana, Inc. This publication provides the date of offering, the offering price, and the number of shares sold. This information on all offerings is included in Table 5. The figures in this table indicate the sample is representative and broad ranging. The offering prices range almost uniformly from the $5.00 category to over $15 with the model group the $5-$10 category which is consistent with expectations. At the same time, the sample is clearly not dominated by low priced securities since there are more new issues priced over $15 than under $5.

In terms of the number of shares offered, the popular range seems to be between 100,000 and 300,000 with about 55 percent of the total

sample in this range. At the same time, almost 40 percent have over 300,000 shares so again the sample is clearly not dominated by small issues.

Finally, the distribution of the total value of the offerings was quite representative. Specifically, about 21 percent of the offerings had a value of less than one million dollars, and another 15 percent of the offerings exceeded seven million dollars. Clearly the major concentration was in the range 1-5 million that included about 55 percent of all offerings.

In summary, the sample was derived from an available public source that included a wide range of issues in terms of price and total value. Therefore, any results should not be affected by a small size bias.

Time Intervals

For the new issues derived from the OTC Chronicle the excess market returns (to be defined in the following subsection) were computed for six periods:

(1) From the offering to the first Wednesday after the offering

(2) From the offering to the fourth Wednesday after the offering

(3) From the offering to the Wednesday or Friday a year after the offering

(4) From the first Wednesday after the offering to the fourth Wednesday

(5) From the first Wednesday to the Wednesday or Friday a year after the offering

(6) From the fourth Wednesday to the Wednesday or Friday a year after the offering.

The first three intervals indicate the returns for investors who acquire the new issues at the original offering. Periods (1) and (2) are for the very short-run and are most relevant for determining the premium on the new issues in an efficient market where prices adjust very quickly to any underpricing. Most prior studies have concentrated on the monthly returns. The use of a weekly and monthly return allows the analysis of excess returns during a much shorter interval, but also allows a more rigorous test of market efficiency.

The last three subintervals are used for the analysis of the aftermarket for new issues. As noted, interval (4) indicates what happens immediately after the initial price adjustment. Intervals (5) and (6) indicate the returns available to investors who acquire new issues in the aftermarket and hold the issues until a year later.

Market Adjustment

All price changes for the unseasoned new issues will be adjusted for a comparable market price change during the same period as follows:

$$EPC_{i,t} = NIPC_{i,t} - MPC_t$$

$EPC_{i,t}$ = excess percent price change for stock i during period t.

$NIPC_{i,t}$ = percent price change for new issue i during period t (the time periods are one of the six discussed previously).

MPC_t = percent price change for market series during period t where the time period is the same as for the new issue.

There are two market series considered in all comparisons: (1) the National Association of Securities Dealers Industrial Index (NASDAQ Industrial Index), and (2) the Dow Jones Industrial Average (DJIA). The author is convinced that the most desirable aggregate market series for this study is the NASDAQ series because it is limited to OTC stocks. All the new issues begin trading on the OTC market and almost all end the first year still trading on the OTC. Because there is a significant difference in the short-run and long-run price changes for stocks listed on the NYSE and stocks traded OTC it seems appropriate to have a market series limited to OTC stocks.[22] This is the first study on new issues that has been able to use the NASDAQ series because the series was only instigated in February, 1971.[23] The NASDAQ industrial index is a value weighted index (similar to the S&P series) that includes all the industrial stocks included on the NASDAQ system. The sample size varies over time from about 1,500 to over 2,000 issues. This series is clearly superior to the NOB series used in several prior studies because it should be a clear reflection of the total OTC market as regards risk and return in contrast to 35 OTC blue-chips that on several occasions have not been reflective of the total OTC market (see especially the comment in connection with the McDonald-Fisher study).

The DJIA series is used, not because it is considered the most appropriate series but because of its wide popularity. More important, it is considered an excellent benchmark for NYSE blue-chips. As such, it should indicate the difference in effect when using an OTC series and the effect of using a

[22] See footnote #2.

[23] For a detailed discussion and analysis of the NASDAQ series see, Frank K. Reilly, "An Early Report on the NASDAQ Over-the-Counter Stock Price Indicators," University of Wyoming Research Paper No. 1, (January, 1973).

very low risk market series for the NYSE. We would expect the difference to be most noticeable when examining the excess returns during the year after the offering.

Incomplete Records

A fairly common problem with analyzing returns for stocks traded on the OTC is that quotes may not be available because the stocks don't trade on a particular day or because they are simply no longer quoted on the NASDAQ system because of a lack of interest. This problem is substantially greater when examining initial public offerings because the risk is substantially greater -- i.e., there is a greater probability of no interest in the stock or possibly no trading because the company is no longer in business. Prior studies typically solved this problem in one of several ways. One alternative is to pre-screen the sample and only consider those new issues that had quotes available for all desired periods. Another alternative is to examine the performance of new issues for only a short period after the initial offering. During a period when there is a fair amount of interest in new issues you can find quotes for almost all recent offerings. Finally, if the original sample is large enough, it is possible to simply ignore a few pricing quotes for a given time period.

In this study an effort is made to consider the effect of this exclusion, but also analyze as much data as possible. Specifically, for all the new issues reported, there is at least one quote available (the first Wednesday). There are some cases where the fourth Wednesday is missing, and more instances where a year later quote is not available. The analysis includes all potential price changes when available, but also

divides subsequent samples into groups where all data is available and groups with limited quotes to determine if there is any difference. As an example, the period 1 analysis includes four groups:

1. Those stocks that have all quotes available (first Wednesday, fourth Wednesday, and year later). This sample is referred to as the "complete data sample."
2. Those stocks that have one week and one month quotes available (no year later quote available).
3. Those stocks that only have the one week quote (no fourth Wednesday or year later quote available).
4. All available data - combines all groups.

PRESENTATION OF RESULTS

The results are discussed in terms of the holding period -- i.e., the initial subsection considers the price changes from the offering price to the first Wednesday; the following subsection discusses price changes from the offering to the fourth Wednesday, etc. Within each holding period the various samples are considered determined by the data available.

Wednesday After Offering

Table 6 contains the price change results for new issues from the offering price to the bid quotation on the first Wednesday after the offering. Obviously these are very short-run results that can vary from two days after the offering to eight days. Typically, if a new issue was offered on a Tuesday it would not be quoted on the following Wednesday, but would be quoted a week later (eight days after the offering).

Complete Data Sample. A sample of 228 stocks had quotes available for all three days (first Wednesday, fourth Wednesday, year later). The average percent price change for these stocks from the offering price to the price on the first Wednesday after the offering was 10.7 percent,

while the median price change was 6.5 percent (these price changes are not adjusted for market movements). The standard deviation (25.5) and coefficient of variation (CV) for the distribution (2.4) are quite large and indicate a wide distribution of returns during this initial period. The two measures of skewness confirm prior study results -- the distribution is very highly skewed to the right.[24] This skewness would indicate that any losses are generally small, while some of the price increases are substantial. Such results are consistent with the practice of supporting the price if the market for the new issue weakens, but allowing any gain to transpire.

The figures for the two market indicator series are quite small given the short time interval. Notably, the NASDAQ series is slightly more volatile than the DJIA (subsequent results consistently confirm this). This difference is consistent with the expectation that these OTC stocks are higher risk.

The mean excess price change results are similar to the unadjusted price change results because the market series generally experienced very small price changes during this interval. The median excess price changes were smaller than the mean excess price changes but they were still positive values (3.3 and 3.0 percent). The difference reflects the skewed nature of the distribution.

Sample Without Year After Quote. There were 232 new issue stocks that had quotes for the first and fourth Wednesday, but no quotes for the year later period. The mean unadjusted price change for this sample

[24] For a discussion of the two measures of skewness see Ya-Lun Chow, Statistical Analysis, 2nd ed. (New York: Holt, Rinehart and Winston, 1975), pp. 71-72.

was consistent with the full data sample results -- i.e., an 11.1 percent increase versus 10.7 percent. Notably, the median price change was different -- 0 percent versus 6.5 percent for the complete data sample. The reason for this difference can be seen from an analysis of the other distribution statistics. The distribution of price changes for this sample is more diffuse as indicated by the standard deviation and CV, and it is also more skewed than the full data sample. Therefore, although the average return was positive, only about half the new issues increased in price. Clearly some of the new issues experienced large increases.

The results for the market series were generally similar to the prior results. The excess price change results showed average results similar to full data sample results (an 11.1 percent increase). Again, the median excess price change results were clearly lower than the average results and lower than the complete data sample results but both median figures were positive (1.1 and 1.6 percent). This reflects the more diffuse nature of the distribution and the greater skewness to the right.

Only First Wednesday Sample. There were 21 stocks that only had quotes for the first Wednesday after the offering. As before, the mean price change was positive and close to the other sample results. Again, because of a diffuse, skewed distribution, the median price change was a negative 2 percent.

Interestingly, both market series had a positive mean and median price change indicating that on balance these 21 issues came during good market periods. The mean excess price changes for this sample were large

positive values (10-11 percent), but the median excess price changes were negative (minus 1-2.5 percent). Again, the standard deviations were large and the distributions were definitely skewed to the right. Notably, the negative median results indicate that more than half of these issues had negative excess price changes.

Total First Wednesday Sample. Combining the three subsamples discussed plus five others gives a composite sample of 486 new issues with a quote available for the first Wednesday after the offering. The mean unadjusted price change was almost 11 percent and the median price change was almost 2 percent. The excess price changes were very similar to these figures. As before, the difference between the mean and median price changes reflects the highly skewed distribution.

In addition to an examination of the price changes, there was an analysis of the number of issues that experienced increases, decreases and no change. As noted, if one hypothesizes that there is underpricing, he would expect that significantly more than half the new issues would have excess price changes during this initial period. This hypothesis was tested by a chi-square test that stated that the proportion increasing was equal to .5 -- a rejection of this specification would support the hypothesis that new issues were underpriced.[25] The test was carried out on the 486 issues in the all available sample. The excess price changes relative to NASDAQ indicated 285 new issues had positive values, one had zero value, and 200 had negative values. Comparing the number

[25] See Ya-Lun Chow, Ibid., pp. 542-545. The chi-square value at .05 percent was 3.84.

of positive values to the combined zero and negative, one would reject the hypothesis that the proportion was .5 (the chi-square value was 14.17 compared to a required value of 3.84). The excess price changes relative to the DJIA showed that 283 had positive excess price changes compared to 203 with negative values. The chi-square value was 12.842 which likewise would clearly reject the hypothesis of equal proportions. Therefore, these results support the hypothesis that new issues are underpriced because significantly more than half the new issues experience positive excess price changes during the period immediately after the offering.

Summary of First Wednesday Results. The very short-run price changes for new issues from the offering price to the price on the first Wednesday after the offering were very consistent with the results for all previous studies. The mean excess price changes during this brief period immediately after the offering were generally about 11 percent. Notably, the distributions of price changes were quite variable as indicated by high standard deviations and CVs. Also, the distributions were highly skewed to the right. This skewness also meant that the median price changes were clearly smaller than the mean price changes -- i.e., the median excess price change was about 2 percent. The average price change results for the various subsamples were similar, but the median results were different. The median excess price changes for the complete data sample was 3 percent; it was between 1 and 2 percent for the sample missing the year later quote, and it was a small negative value for the small sample (21) that only had the first Wednesday quote. These different median results are some indication of differences for alternative samples -- i.e., the practice of only including new issues where all required data

It should be noted that, given the large standard deviations of these price change distributions, none of the mean values would be statistically significant if one were to apply a t-test to the distributions. This observation is tempered by two other points. First, because of the skewness of the excess return observation, a t-test is not appropriate. Further, the mean excess price changes clearly are large in an absolute sense for such a short period and it is contended that these results are very consistent with results from other studies on new issues. As an example, in the McDonald-Fisher study, the mean excess price changes for the period from the offering to the first published market price in the first week was 28.5 percent and the standard deviation was 46.5 percent. Subsequently, for the first month, the mean excess price change was 34.6 percent and the standard deviation was 75.8.

Beyond the mean and median excess price changes, an analysis of the number of new issues with positive excess price changes clearly supported the underpricing hypothesis. This analysis employed a chi-square test which is valid with a non-normal distribution and indicated that significantly more than half the new issues enjoyed positive excess price changes.

Fourth Wednesday After Offering

This subsection considers the results for the period from the offering price to the fourth Wednesday after the offering. The results are in Table 7.

Complete Data Sample. The mean unadjusted percent price change for this time interval was 12.1 percent compared to 10.7 for the first Wednesday. Again, the median price change was smaller than the mean, and it was also below the median for the first Wednesday (1.2 percent versus 6.5 percent).

The mean and median price changes for the two market indicator serie were small values. Again, this is not surprising for the time interval. The mean excess price changes were 11.6 and 12.0 percent, and the median excess price changes were 2.4 and 1.7 percent. These different values reflect the positive skewness of the distribution which is confirmed by the third moment of 3.53.

No Year After Quote Sample. The mean unadjusted price change for this sample was 12.3 percent, but the median price change was a negative 1.6 percent. The median result indicates that more than half the 232 new issues experienced a price decline from the offering to the fourth Wednesday.

The excess price changes confirmed these results. The mean excess price changes were about 12 percent, while the median excess price changes were -2.0 and -2.6 percent. These results reflect the skewness of the distribution as shown by the range of price changes which run from about minus 64 percent to a positive 482 percent.

Only Fourth Wednesday Quote Sample. There were 17 new issues that only had a quote for the fourth Wednesday. Although the sample size is small the results are of interest because they tend to confirm the notion that there are differences in results for the alternative subsamples. The mean price change was 7.8 percent (with a range from -33 to +94 percent). In contrast, the median price change was -3.1 percent. Clearly more than half these stocks declined in value from the offering to the fourth Wednesday.

It appears that most of these new issues were offered during a declining market because both the mean and median changes for the market series were negative and were skewed to the left. This observation is also

supported by the excess price change results which show that the mean excess price changes were above the unadjusted results (9.8 and 8.9 percent excess price changes versus 7.8 percent unadjusted). Also the median excess price changes were smaller negative values (-2.5 and -4.3 percent versus -9.1 percent).

All Available Data Sample. The combined sample results had an unadjusted mean price change of almost 12 percent, but a median value of zero indicating that half the new issues increased and half decreased from the offering to the fourth Wednesday. The actual results showed that 216 increased, 27 were unchanged, and 242 experienced price declines.

The excess price change results confirm the importance of the skewness of the distribution. The mean excess price changes were over 11 percent for the period -- they ranged from about -74 percent to +481 percent. In contrast, the median excess price changes were -2.5 and -4.3 percent which indicates that more than half the new issues declined relative to the market during the first four weeks after offering (compared to NASDAQ 231 increased and 254 declined; relative to the DJIA 232 increased and 253 declined). A chi-square test of the proportions indicated that one should accept the hypothesis that half the new issues did better than the market and half did worse during this time interval.

Summary of Fourth Wednesday Results. The mean results for this time interval after the offering confirm prior study results in that they indicate positive average price changes unadjusted and relative to the aggregate market. These results also indicate the importance of considering the full distribution of price changes and the full sample of new issues. Specifically, although the mean price changes are strong positive values, the median price changes are either small positive

values (about 2 percent), or small negative values. The median results (confirmed by a chi-square test) indicate that about half the new issues did not increase during the first month after offering relative to the aggregate market. The results for the alternative subsamples indicate that the median results differ depending upon what quotes are available. Specifically, if one considers only new issues where complete data are available (i.e., all the desired quotes) the results are positive. In contrast, the median excess returns are negative when the sample includes new issues where all subsequent quotes are not available.

Year After Offering

In this subsection the results are presented and discussed for the period from the offering to a Wednesday or Friday one year after the offering. In cases where quotes were not available for the day 52 weeks after the offering, the source was checked for the week before and after. These results are contained in Table 8.

Complete Data Sample. These results are clearly affected by the fact that stock prices turned down sharply in January, 1973 (the actual peak closing price based upon an analysis of the DJIA was on January 11, 1973). As a result, almost all the year-after results were for a period that ended in a declining market and the decline was more severe for the OTC market.

The mean unadjusted price change was a negative 28 percent with a range from -91 percent to +187 percent. As always, the distribution was positively skewed as shown by a median unadjusted price change of almost minus 39 percent. Clearly, almost all the new issues offered during this period declined in price during the first year after the offering.

The state of the aggregate market can be seen from the results for th market series during the period. The mean price change for the NASDAQ

series was -22.7 percent, and it was -3.3 percent for the DJIA. Besides indicating the state of the market, these results clearly indicate the importance of alternative market series when analyzing results for longer-run periods. Obviously, the excess price change results for new issues are going to be seriously influenced by the market indicator series used in the analysis. The higher standard deviation of price changes for the NASDAQ series relative to the DJIA (10.1 versus 6.9) indicates the higher risk of the OTC. Both of these standard deviations relative to the standard deviation for the new issue distribution (44.4) confirm the high risk involved in new issues.

Because of the differences in results for the market series, the excess price changes for the new issues are dependent on which series is used as the base. Assuming the NASDAQ series is more appropriate regarding risk, the mean excess price change is a -5.0 percent and the median excess price change is -13.9 percent. As one would expect during a period of declining stock prices, the low risk DJIA series declined less than the NASDAQ series. As a result, the excess returns for the new issues relative to the DJIA were much larger negative values -- the mean excess price change was -25 percent and the median excess change was -33 percent.

It is obviously an understatement to say that new issues did not fare very well during the period from offering to a year later. These results are most likely attributable to the fact that almost all the year later figures were influenced by the declining market that began in January, 1973 and one would expect higher risk stocks to decline more during a falling market.

First or Fourth Wednesday Price Missing Sample. These results will not be discussed very extensively because of the very limited sample observations -- eight and five. The results for the eight stocks with the first Wednesday

price missing generally experienced very poor results -- clearly worse than the complete data sample. In contrast, the five new issues with the fourth Wednesday quote missing experienced results much better than all other samples. The fact is, none of these five new issues experienced a decline -- the range was from 0 percent to +229 percent. Clearly the excess returns were very large -- averaging 85 and 69 percent.

All Available Data Sample. These results are obviously dominated by the complete data sample results (228 out of 244 stocks). The major difference is that the unadjusted new issue results are smaller negative values and the subsequent excess price changes are also smaller negative values -- i.e., the mean excess change relative to NASDAQ is only -3 percent. The results in terms of the number of new issues clearly confirm the adverse results. During this interval, 77 of the new issues had positive excess price changes relative to NASDAQ and 167 had negative EPCs. Moreover, only 61 had a positive EPC relative to the DJIA and 193 had a negative EPC. The chi-square test definitely rejected the hypothesis of an even split and indicated that significantly more than half the new issues experienced negative excess price changes.

Summary of Year Later Results. The results were apparently heavily influenced by the fact that almost all the year later results were during a major declining market that began in January, 1973. As a result, the mean and median unadjusted price changes were large negative values: -28 percent and -39 percent. The excess price changes were likewise negative, but smaller because both market indicator series showed declines. The results clearly showed the importance of the market series because the mean excess price change with the NASDAQ series was -23 percent compared to only -3 percent using the DJIA. The median excess price changes were -14

percent and -33 percent. Obviously, the two market segments do not move together over longer-run periods and the market series employed will make a difference in long-run analyses. One would not expect the same problem with the NASDAQ series as encountered by Fisher and McDonald in using the NQB series because the NASDAQ series contains all the stocks traded on the NASDAQ system -- i.e., it is not a small select sample as with the NQB series.

One would probably speculate that the very poor results are because new issues are certainly higher risk, as shown by the distribution of returns, and during a declining market one would expect high risk stocks to decline more.

First Wednesday to Fourth Wednesday

A major question regarding new issues is how quickly the prices adjust to the apparent underpricing that has been found in almost all studies. Assuming the existence of an efficient equity market one would expect the prices to adjust very quickly after the offering such that the returns to investors who acquired the new issues in the aftermarket would not exceed returns one should expect based upon the differential risks involved in new issues. The testing of the price adjustment process is in three parts. The first part considers what happens from the first Wednesday to the fourth Wednesday. The second part examines the price changes from the first Wednesday to a year later, while the third part examines price changes from the fourth Wednesday to a year later. In all cases advocates of an efficient capital market would expect average excess price changes to be lower than those derived from the offering price to the first available quote because the market should have adjusted the offering price upward to take account of any underpricing by the underwriter. Hence, subsequent

returns should be consistent with the risk involved. These results are contained in Table 9.

Complete Data Sample. The unadjusted price changes ranged from -86 percent to +309 percent. Reflecting the skewed distribution, the mean return was +1.7 percent, compared to a median return of -1.8 percent. The excess price change results were quite similar. The mean excess price changes were +1.5 and +1.3 percent, in contrast to median excess price changes of -1.3 and -2.3 percent. These results tend to support the efficient market concept in that the mean returns were small positive values and the median returns indicate that more than half the new issues declined on an unadjusted basis and definitely relative to the aggregate market.

No Year After Quote Sample. The results for this subsample are noteworthy because they appear to be definitely different from the prior subsample. Specifically, the mean price changes (unadjusted and excess) are much larger positive values. At the same time, all median price changes for this subsample (unadjusted and excess) are larger negative values than the complete data sample. These differences reflect the fact that the distribution of price changes for this subsample is more disperse (much larger standard deviation), and more skewed to the right as indicated by the third moment of the distribution. Even so, these results support the adjustment hypothesis because the mean returns are lower than those in Table 7 and the median returns indicate that well over half these new issues experienced negative price changes during this interval.

All Available Data Sample. The combined sample results are generally intermediate between the two subsamples which is not surprising given the almost equal sizes. Notably, all mean price changes (unadjusted and excess)

are positive and range from 4.8 percent to 5.4 percent. In contrast, all median price changes are negative which reflects the skewed nature of the distribution and also indicates that for this time interval over half the new issues declined in price on an absolute basis and relative to the aggregate market.

Summary of First to Fourth Wednesday Results. These results support the efficient market hypothesis where prices adjust quickly to any underpricing. This support is based upon the median price change results that indicate that over half the new issues experience negative excess price changes during this interval -- maybe there is a tendency to overadjust. These results are also notable in that they indicate a definite difference for the two subsamples. Apparently, the results for the sample of new issues without a year later quote are more diffuse and definitely more skewed.

First and Fourth Wednesday to Year After

These results indicate the long-run results for investors who acquired the new issues in the aftermarket and held the new issue until a year later. Again, these results are very important to an analysis of an efficient market. Those who advocate an efficient market would expect these returns to be consistent with the risk involved because any underpricing should have been corrected during the first week or first month.

For each period there are two sets of results in Table 10 -- complete data sample and all available data sample. Because of the small differences in the samples, both sets of results for a given time interval will be discussed at one time.

First Wednesday to Year Later. Similar to the results from the offering to a year later, the unadjusted price changes are large negative values because almost all the year periods ended during a declining market. The difference between these results and those from the offering is that the mean and median values are larger negative values. This difference is consistent with the efficient market hypothesis that contends that by the first Wednesday the underpricing should have been corrected and, therefore, any decline as a result of a decline in the aggregate market should have been more severe. Alternatively, if it had been a rising market the increase should have been less. As always, the median is lower than the mean because of the skewed distribution.

The excess price changes were smaller negative values than the unadjusted results, but were larger than the prior results from the offering. Clearly the excess price changes using the DJIA were much worse because this blue-chip series for the NYSE only declined by about 3 percent, compared to 23 percent for NASDAQ. One could use these results along with those in Table 8 (from offering to year later) to derive an estimate of the average amount of underpricing on new issues. Specifically, the excess price change from the offering to a year later is a combination of a return due to underpricing and a "normal" return that reflects the market return and the security's risk class. In contrast, assuming an efficient market where stock prices adjust quickly to the underpricing, the excess price change from the first Wednesday to a year later should only be the "normal" return that reflects the market return adjusted for differential risk. Therefore, the difference between these two figures is an estimate of

the underpricing. In the current case using the median "All Available Data Samples" results, the underpricing would be between 5.7 percent (-13.8 and -19.5) and 4.4 percent (-33.3 and -37.7) depending upon the market series used.

These results from the first Wednesday support the efficient market belief that investors who invest in new issues in the aftermarket do not fare as well as those who are able to acquire the new issues at the offering price. In fact, during a declining market they fare much worse which is consistent with the higher risk of these securities.

Fourth Wednesday to Year Later. These results are very consistent with the results for the first Wednesday. The mean price changes are slightly smaller negative values which one might expect because of the shorter holding period. The median price changes are always larger negative price changes than the means and almost identical to the median price changes for the first Wednesday. These relationships hold for the unadjusted price changes and the excess price changes. The only difference is magnitude based upon the extent of market decline.

All these results that assume an investor acquired the new issues in the after market and held them until a year after the offering indicate that such an investor would not do as well as an investor able to acquire the new issues at the offering. Apparently there is some underpricing of new issues on average, but the market adjusts the price rather quickly.

Alternative Market Periods

As noted previously, one of the advantages of the time period selected (1972-75) is that it included a period of rising stock prices (1972) and an extended period of declining stock prices (1973-74). Such a division

makes it possible to examine the difference in short-run results during alternative market periods. It does not seem necessary or possible to examine differential long-run results because almost all such results were affected by the declining market that began in January, 1973. Although the results for the several subsamples are different, they do not lead to alternative conclusions. Therefore, the results for either rising or declining market periods include all available data.

Offering to First Wednesday: 1972. These results for a rising market contained in Table 11 are quite consistent with those reported in the last column of Table 6. The major difference is that the mean and median price changes were consistently larger positive values as follows:

		Total Period	1972
Unadjusted	- Mean	10.9	12.1
	- Median	1.8	2.3
Excess (NASDAQ)	- Mean	10.9	12.0
	- Median	2.1	2.2
Excess (DJIA)	- Mean	10.8	11.9
	- Median	2.0	2.4

Because of the large variance for these distributions none of these differences would be statistically significant, but they are consistent. This indicates that investors in new issues would derive greater absolute and relative returns in the short-run during periods of generally rising stock prices.

Offering to Fourth Friday: 1972. These results in the middle column of Table 11 are most comparable to the last column results reported in Table 7. The difference in sample size (485 vs 430) represents the 55 new issues offered during 1973-74. Again, all the mean returns for the 1972 samples are typically 1.0-1.5 percent higher than the total sample results as shown below:

		Total Period	1972
Unadjusted	- Mean	11.7	14.0
	- Median	0.0	0.0
Excess (NASDAQ	- Mean	11.6	13.4
	- Median	-1.2	-0.8
Excess (DJIA)	- Mean	11.1	13.2
	- Median	-1.2	-0.7

There is less of a difference between the median returns. In fact, in the case of the unadjusted price changes there is no difference - both are zero percent which indicates that even during this generally bullish period, half the new issues declined in price from the offering to the fourth Wednesday. Moreover, even during this period, both the median excess rpice changes were small negative values which indicates that relative to the market, more than half the new issues had negative returns. These results compared to the first Wednesday results indicate that during this interval the distribution became more disperse and more skewed as the mean price change increased, but the median value declined. This observation is confirmed by the standard deviation and skewness measures and should be reflected in the specific results for the period from the first Wednesday to the fourth Wednesday.

First Wednesday to Fourth Wednesday: 1972. These results are comparable to those reported in the last column of Table 9. Again, as shown below, in all comparisons the mean price changes increased somewhat -- about 1 percent. At the same time, the median price changes were slightly

		Total Period	1972
Unadjusted	- Mean	5.4	6.6
	- Median	-2.4	-2.1
Excess (NASDAQ)	- Mean	5.1	6.1
	- Median	-3.0	-2.9
Excess (DJIA)	- Mean	4.8	6.0
	- Median	-2.8	-2.6

smaller negative values. This means that even during a period of generally rising prices that clearly more than half the new issues declined in value during this time interval on an unadjusted basis and relative to the aggregate market.

Offering to First Wednesday: 1973-74. The results contained in Table 12 indicate the short-run price changes for new issues offered during 1973 and 1974 when the aggregate stock market experienced one of its severest declines since 1929. Specifically, during calendar year 1973 the DJIA declined 16.6 percent, the S&P 500 declined 17.4 percent, the ASE Index fell 30 percent, and the NASDAQ Industrial Index declined 35.9 percent. Subsequently, in 1974 the series declined further as follows: DJIA - 27.6 percent; S&P 500 - 29.7 percent; ASE - 33.2 percent; and NASDAQ Industrial - 32.4 percent. The obvious question is whether the abnormal short-run price changes found in prior studies are experienced during such a period. Besides the difference in the market environment, the sample sizes are substantially smaller reflecting the sharp decline in the number of unseasoned new issues offered in 1973 and 1974 as shown in Table 1.

The comparative results from the offering to the first Wednesday were as follows:

	Total Period	1973-74
Unadjusted - Mean	10.9	0.4
- Median	1.8	-0.9
Excess (NASDAQ) - Mean	10.9	1.4
- Median	2.1	1.5
Excess (DJIA) - Mean	10.8	0.7
- Median	2.0	0.5

The unadjusted price changes indicate that the mean price change was slightly positive and with the skewed distribution, the median price change was a small negative value -- less than 1 percent. Given the market environment, the mean and median values for the two market indicator series were negative and very slightly skewed to the right.

The excess price changes using either series were consistently positive values. This was true for both the mean and median figures. With NASDAQ the excess price changes were 1.4 and 1.5 percent; with DJIA 0.7 and 0.5 percent. Although the figures are certainly not very large, it is notable that they were positive -- even during a very poor market environment.

It is contended that these very short-run results for new issues during a declining market provide very strong evidence in support of the underpricing hypothesis. It is readily acknowledgedthat new issues are very high risk investments as indicated by the large standard deviations. As such, in the terminology of capital market theory, these securities should have large beta values. In fact, in the study by Ibbotson, the author estimates the systematic risk (beta) of the new issues and indicates that it is initially about 2.2.[26] This would mean that during a period of

[26] Ibbotson, "Price Performance...," op. cit., p. 258.

generally declining stock prices, the price declines for these new issues should be twice as large as the market declines. In this current case, the NASDAQ series declined by about 1 percent which would imply an expected price decline for the new issues on the basis of risk of over 2 percent. As noted, the median excess price change relative to NASDAQ was a positive 1.5 percent. This difference can only be attributed to underpricing.

Offering to Fourth Wednesday: 1973-74. The results were as follows:

	Total Period	1973-74
Unadjusted - Mean	11.7	-6.5
- Median	0.0	-8.3
Excess (NASDAQ) - Mean	11.6	-2.7
- Median	-1.2	-6.1
Excess (DJIA) - Mean	11.1	-5.1
- Median	-1.2	-8.6

The results indicate consistent negative value unadjusted and relative to a declining stock market. Apparently new issues did not do well during the first month after the offering in a declining market environment -- even though they had positive excess values during the first week.

First Wednesday to Fourth Wednesday: 1973-74. Based upon the results for the previous two intervals after the offering one can speculate as to these results. These price changes indicate the returns that would have been experienced by an investor who acquired the new issues in the after market and held them for the subsequent three weeks. The results were as follows compared to the full period results:

	Total Period	1973-74
Unadjusted - Mean	5.4	-5.7
- Median	-2.4	-3.7
Excess (NASDAQ) - Mean	5.1	-3.1
- Median	-3.0	-4.8
Excess (DJIA) - Mean	4.8	-5.0
- Median	-2.8	-5.2

All the unadjusted and excess price changes were negative values ranging from about -3 percent to -5 percent. Clearly the majority of new issues declined in absolute terms during this time interval and relative to the aggregate market that was also declining.

Overall these results for new issues during a declining stock market indicate that investment bankers do underprice new issues during such a period, but the market adjusts for the underpricing very quickly. As a result, during the first week there are excess returns, but if an investor holds until the fourth week the returns become negative. Further, if one utilizes the new issues in the after market the returns are likewise negative.

SUMMARY AND CONCLUSION

Summary

The purpose of this study was to update the analysis of new issue price changes during the period immediately after the offering and during the year following the offering. A review of prior studies indicated results that were very consistent on several major points. The first was that the very short-run price changes for the period immediately following the offering always indicated positive excess price changes. Such results imply a strong tendency on the part of investment bankers to underprice new issues. The results also generally supported the notion of an efficient stock market because it appears that the prices for the new issues are adjusted rather rapidly to the underpricing such that investors who acquire the new issues in the after market typically do not receive returns in excess of what one might expect for the risk involved.

In addition to updating prior studies that generally stopped with 1970, there was also an analysis of the effect of only including new issues when

all the quotes were available. Further, there was an analysis of short-run results during alternative market periods -- the rising market of 1972 versus the declining market that prevailed during 1973 and 1974.

Before discussing specific results, one general result that was true for almost every distribution of new issue price changes was that they were highly skewed to the right. Therefore, the mean returns are always higher than the median returns with one exception. This is true for the unadjusted price change and the excess price changes relative to two alternative market indicator series -- the NASDAQ Industrial Index and the DJIA. Regarding the market indicator series, both series were considered because prior studies have employed a range of series and it was considered important to show the effect of alternative types of series -- especially when examining longer-run changes. Notably, almost all the long-run results for the year after the offering were seriously influenced by the market decline that began in January, 1973. The importance of the market series employed became evident for the year after analysis because there was a significant difference in the price changes for two series, which in turn affected the computed excess price changes. Because the year later period was generally a declining market, the DJIA, which is a low risk series, experienced a much smaller decline than the NASDAQ series -- i.e., approximately a 3 percent median drop for the DJIA compared to a median decline of over 20 percent for the NASDAQ series. Clearly the market series used does make a difference.

The results from the offering to the first Wednesday were very consistent with prior results. The mean price change (unadjusted or excess) was between 10.6 and 11.3 percent. The median price changes were generally between 1 and 2 percent. There were differences in results for alternative subsamples with a tendency for the incomplete data sample results to be slightly lower in median terms, more skewed to the right, and clearly more dispersed.

The results from the offering to the fourth Wednesday were consistent with the first Wednesday in terms of the average price changes, but not the median price changes. The other unique factor was the difference in results for alternative subsamples. The average price changes (unadjusted and excess) were about 11 percent and there was only a small deviation for the subsample with only the fourth Wednesday quote. In contrast, the median results varied widely by the subsample. The only subsample with positive median price changes was the "complete data sample." For this subsample the unadjusted change was 1.2 percent and the excess price changes were 2.4 and 1.7 percent. These results would indicate that as of the fourth Friday that investors still enjoyed superior returns. In contrast, the other two subsamples that did not have complete data had negative median returns. For the "no year after quote" sample the unadjusted price change was -1.6 percent and the excess price changes were -2.0 and -2.6 percent. For the "only Wednesday" sample the price changes were -9.1; -2.5; and -4.3 percent. For these latter two samples more than half the investors experienced negative returns from the offering to the fourth Wednesday. The all available results also had negative median excess price changes. These results clearly show the importance of the subsample and indicate how one might obtain biased results by only including new issues where all the quotes are available.

The results from the offering to a year after definitely did not support the notion of excess returns available for new issues in the longer run - all unadjusted and excess returns were negative except for a small unique sample (n=5). Apparently these results were heavily influenced by the stock market decline that started in January, 1973. As a result almost all the year later quotes came during a declining market.

The results for the major samples indicate that the unadjusted prices declined by 30-40 percent, while the excess price changes relative to NASDAQ had a median price change of -13 percent, and relative to the DJIA had a median change of over -30 percent. Obviously, the market series used made a large difference in computing the excess returns for the long-run (one year).

It is important to know what results are derived by investors who acquire new issues following the offering in the after market. These results are realistic because these returns are available to everyone and they are also important for those interested in the concept of efficient capital markets because if the market is truly efficient one would expect the prices of the new issues to adjust quickly to any underpricing. Hence, those who acquire new issues in the after market should not experience abnormal risk-adjusted returns.

The results for all the subsamples for the period from the first to the fourth Wednesday were relatively consistent. All the mean results (unadjusted and excess) were positive values that ranged from about 2 percent (for the complete data sample) to almost 9 percent (for the sample of stocks without a year later quote). In contrast, all the median price changes were small negative values that ranged from -2 to -4 percent. This would indicate that during this three week time interval more than half the new issues in all subsamples acquired after the offering experienced price declines. These results would indicate support for the efficient market hypothesis because they indicate that most investors who acquired new issues immediately following the offering in the after market did not experience abnormal price changes.

Investors who acquired new issues on the first or fourth Wednesday and held them until a year later consistently experienced negative unadjusted price changes and negative excess price changes. In fact, over 80 percent

of the new issues declined in price from either the first or fourth Wednesday to the year later. As one might expect in an efficient market, the price changes (unadjusted and excess are larger negative values than those experienced from the offering. It appears that the prices were adjusted shortly after the offering for any underpricing and declined thereafter in line with the declining market. In fact, the new issues declined by more than the aggregate market as one might expect because of the risk involved in new issues. The price declines from the first and fourth Wednesday were generally similar.

The final two tables considered the short-run price changes for new issues offered during the rising market of 1972 compared to price changes for new stock issues offered during the bear market of 1973-74. The results from the offering to the first Wednesday clearly supported the underpricing belief since all mean and median price changes were positive - the mean price changes around 12 percent, the median price changes were in excess of 2 percent. From the offering to the fourth Wednesday the mean price changes became larger positive values while the median price changes were either zero (unadjusted) or small negative values (excess price changes). This rapid adjustment in prices is confirmed by the results from the first Wednesday to the fourth Wednesday. In this case the mean price changes were about .6 percent, but the median price changes were about -2.5 percent. Hence, even during a rising market, those who acquired the new issues in the after market did not consistently experience positive excess returns.

The results during the declining market confirmed the initial underpricing expectation, but also the rapid adjustment hypothesis. Specifically, even during a period of declining stock prices there were positive excess price changes (both mean and median) from the offering to the first Wednesday.

This is strong support for the underpricing thesis because on the basis of risk alone these new issues should have experienced price declines greater than the market. In contrast, all other short-run price changes during the period after the offering were negative values indicating a very rapid adjustment to the underpricing.

Conclusion

Based upon the results it is possible to make the following observations:

1. These results clearly support the notion that underwriters of unseasoned new issues underprice the new issues such that those investors who acquire the new issues at the offering price experience excess price changes relative to the aggregate market for a brief period after the offering.
2. The distribution of price changes for new issues (unadjusted and excess) is highly skewed to the right and quite dispersed. As a result, the median price changes are almost always below the mean. Further, assuming the standard deviation is a useful measure of risk, new issues are clearly higher risk than the aggregate market.
3. The results provide strong support for the efficient market hypothesis. It appears that the market adjusts the new issue prices for the underpricing almost immediately (i.e., by the first Wednesday after the offering). As a result, the returns from the offering to the fourth Wednesday are typically negative relative to the market and the price changes from the first Wednesday to the fourth Wednesday are likewise negative. This occurred during rising and declining markets.

4. It appears that sample selection does make a difference. Apparently the practice of only including new issues that have all desired quotes available can cause a bias. The distribution of price changes for incomplete data samples tend to be more skewed and more dispersed.

5. Finally, the market series used to make adjustments for aggregate market movements does make a difference, especially for the longer-run results - i.e., for the year after analysis. In the current study, the mean price change for the NASDAQ series for the OTC was -23 percent, while the popular DJIA series declined less than 4 percent. Obviously this seriously affected the excess price change results.

Implications

Abnormal returns are available to investors able to acquire new issues at the offering price and willing to accept the additional risk involved in these stocks. Notably, these results are based upon large samples which indicates the need to invest in a large number of such issues. The results for small samples could be much better or much worse. The risk inherent can be seen from the very poor long-run results derived during a declining market. Finally, given the support for the efficient market hypothesis the best results are experienced for the shortest period - from the offering to the first Wednesday.

LISTING OF TABLES

TABLE 1

UNSEASONED COMMON STOCK OFFERINGS
REGISTERED WITH THE SEC UNDER THE SECURITIES
ACT OF 1933: NUMBER AND VALUE

Year	No. of Issues	Amount ($Mil.)	Year	No. of Issues	Amount ($Mil.)
1976(a)	34	167	1971	468	1,246
1975	24	70	1970	425(e)	-
1974	45	82	1969	1,100(e)	-
1973	176	300	1968	575(e)	-
1972	633	1,690			

(a) Ten months : January - October.

(e) Estimated based upon the number of new issues included in "New Issues" published by Review Publishing Company, Jenkintown, Pennsylvania 19046. Prior to 1971 the SEC did not have a separate "unseasoned" category.

Source: "Statistical Bulletin, "Securities and Exchange Commission, Washington, D.C. 20549.

TABLE 2

AVERAGE PERCENT CHANGES FOR NEW ISSUES OFFERED DURING A RISING STOCK MARKET COMPARED TO PERCENT CHANGES IN ALTERNATIVE MARKET INDICATOR SERIES AND RANDOMLY SELECTED OTC STOCKS

	Friday After Offering	Fourth Friday After Offering	Year After Offering
Average Percent Change in all new issues	+9.9	+8.7	+43.7
Average Percent Change in the OTCIA	+0.3	+0.9	+23.1
Average Percent Change in the DJIA	+0.3	+0.5	+ 6.8
Average Percent Change in Randomly Selected OTC Stocks	+0.9	+2.2	+32.5

Source: Frank K. Reilly and Kenneth Hatfield, "Investor Experience with New Stock Issues," Financial Analysts Journal, Vol. 25, No. 5 (September-October, 1969), pp. 73-80.

TABLE 3

AVERAGE PERCENT CHANGES IN NEW ISSUES OFFERED
PRIOR TO A DECLINING STOCK MARKET COMPARED
TO ALTERNATIVE MARKET INDICATOR SERIES
AND RANDOMLY SELECTED STOCKS

	Friday After Offering	Fourth Friday After Offering	Year After Offering
Average Percent Change in all new issues	+10.2	+12.8	+20.4
Average Percent Change in the OTCIA	+ 0.3	+ 3.2	+ 3.1
Average Percent Change in the DJIA	+ 0.3	+ 2.1	-11.9
Average Percent Change in Randomly Selected Stocks	+ 1.1	+ 4.5	- 3.9

Source: Frank K. Reilly, "Further Evidence on Short-Run Results for New Issue Investors," Journal of Financial and Quantitative Analysis, Vol. 8, No. 1 (January, 1973), pp. 83-90.

TABLE 4

RESULTS REFLECTING INVESTMENT IN ALL NEW ISSUES AT POST OFFERING PRICES

	Friday After Offering to Year After Offering		Fourth Friday After Offering to Year After Offering	
	Declining Market	Rising Market	Declining Market	Rising Market
Average Percent Change in all new issues	+ 6.3	+29.8	+ 4.9	+31.3
Average Percent Change in the OTCIA	+ 2.7	+22.7	+ 0.1	+22.0
Average Percent Change in the DJIA	-12.2	+ 6.6	-13.7	+ 6.3
Average Percent Change in Randomly Selected Stocks	- 5.7	+31.3	- 7.4	+29.4

Source: Frank K. Reilly, "Further Evidence on Short-Run Results for New Issue Investors," Journal of Financial and Quantitative Analysis, Vol. 8, No. 1 (January, 1973), pp. 83-90.

TABLE 5

CHARACTERISTICS OF NEW ISSUE SAMPLE

Price	Number	% of Total*
0.01 - $5.00	99	17.90
5.01 - 10.00	192	34.72
10.01 - 15.00	149	26.94
15.01 - Over	113	20.43
Total	553	
No. of Shares		
0 - 100,000	33	5.98
100,000 - 150,000	74	13.38
150,000 - 200,000	92	16.64
200,000 - 300,000	139	25.14
300,000 - 400,000	102	18.44
400,000 - Over	113	20.43
Total	553	
Total Value		
0 - $500,000	21	3.80
500,000 - 750,000	54	9.76
750,000 - 1,000,000	42	7.59
1,000,000 - 2,000,000	104	18.81
2,000,000 - 3,000,000	97	17.54
3,000,000 - 5,000,000	105	18.99
5,000,000 - 7,000,000	45	8.14
7,000,000 -10,000,000	33	5.97
10,000,000 - Over	52	9.40
Total	553	

*Totals may not sum to 100 percent due to rounding.

TABLE 5

CHARACTERISTICS OF NEW ISSUE SAMPLE

Price	Number	% of Total*
0.01 - $5.00	99	17.90
5.01 - 10.00	192	34.72
10.01 - 15.00	149	26.94
15.01 - Over	113	20.43
Total	553	
No. of Shares		
0 - 100,000	33	5.98
100,000 - 150,000	74	13.38
150,000 - 200,000	92	16.64
200,000 - 300,000	139	25.14
300,000 - 400,000	102	18.44
400,000 - Over	113	20.43
Total	553	
Total Value		
0 - $500,000	21	3.80
500,000 - 750,000	54	9.76
750,000 - 1,000,000	42	7.59
1,000,000 - 2,000,000	104	18.81
2,000,000 - 3,000,000	97	17.54
3,000,000 - 5,000,000	105	18.99
5,000,000 - 7,000,000	45	8.14
7,000,000 -10,000,000	33	5.97
10,000,000 - Over	52	9.40
Total	553	

*Totals may not sum to 100 percent due to rounding.

TABLE 6

PERCENT PRICE CHANGES FOR NEW ISSUES AND MARKET INDICATOR SERIES FROM OFFERING TO FIRST WEDNESDAY QUOTE

	Complete Data Sample (N=228)	No Year After Quote Sample (N=232)	Only First Wednesday Sample (N=21)	All Available Data Sample (N=486)
Issues				
ean Price Change	10.7	11.1	11.3	10.9
edian Price Change	6.5	0.0	-2.0	1.8
tandard Deviation	25.5	35.3	52.4	31.8
oeff. of Var.	2.4	3.2	4.6	2.9
earsonian Skewness	0.5	0.9	0.8	0.9
hird Moment	1.10	2.89	2.93	2.70
DAQ Industrial				
ean Price Change	0.1	0.0	0.3	0.0
edian Price Change	0.0	-0.2	1.0	-0.1
tandard Deviation	1.6	1.6	1.5	1.6
oeff. of Var.	16.0	-	5.0	-
earsonian Skewness	0.2	0.4	-1.4	0.2
hird Moment	0.22	0.15	-1.02	.12
A				
ean Price Change	0.0	0.0	0.9	0.1
edian Price Change	0.0	0.0	1.7	0.0
tandard Deviation	1.3	1.3	1.4	1.3
oeff. of Var.	-	-	1.6	13.0
earsonian Skewness	0.0	0.0	-1.7	0.2
hird Moment	0.10	-0.20	-1.18	- .11
ess Price Change (NASDAQ)				
ean Excess Price Change	10.8	11.1	11.0	10.9
edian Excess Price Change	3.3	1.1	-1.1	2.1
tandard Deviation EPC	25.6	35.0	52.1	31.7
oeff. of Var.	2.4	3.2	4.7	2.9
earsonian Skewness	0.9	0.9	0.7	0.8
hird Moment	1.10	2.89	2.95	2.68
ess Price Change (DJIA)				
ean Excess Price Change	10.6	11.1	10.4	10.8
edian Excess Price Change	3.0	1.6	-2.5	2.0
tandard Deviation EPC	25.6	35.1	52.0	31.7
oeff. of Var.	2.4	3.2	5.0	2.9
earsonian Skewness	0.9	0.8	0.7	0.8
hird Moment	1.10	2.88	2.95	2.68

TABLE 7

PERCENT PRICE CHANGES FOR NEW ISSUES AND MARKET INDICATOR SERIES FROM OFFERING TO FOURTH WEDNESDAY QUOTE

	Complete Data Sample (N=228)	No Year After Quote Sample (N=232)	Only Fourth Wednesday Sample (N=17)	All Available Data Sample (N=485)
New Issues				
Mean Price Change	12.1	12.3	7.8	11.7
Median Price Change	1.2	-1.6	-9.1	0.0
Standard Deviation	43.3	54.8	37.4	48.7
Coeff. of Var.	3.6	4.5	4.8	4.2
Pearsonian Skewness	0.8	0.8	1.4	0.7
Third Moment	3.48	4.00	1.05	3.90
NASDAQ Industrial				
Mean Price Change	0.1	0.3	-2.0	0.1
Median Price Change	-0.2	0.2	-1.6	-0.1
Standard Deviation	4.0	4.1	3.7	4.1
Coeff. of Var.	40.0	13.7	1.9	41.0
Pearsonian Skewness	0.2	0.1	-0.3	0.1
Third Moment	0.21	0.04	-0.09	0.13
DJIA				
Mean Price Change	0.5	0.6	-1.0	0.5
Median Price Change	0.7	0.7	-0.8	0.7
Standard Deviation	2.8	2.7	3.0	2.7
Coeff. of Var.	5.6	4.5	3.0	5.4
Pearsonian Skewness	-0.2	-0.1	-0.2	-0.2
Third Moment	0.29	0.08	-0.32	0.15
Excess Price Change (NASDAQ)				
Mean Excess Price Change	12.0	12.0	9.8	11.6
Median Excess Price Change	2.4	-2.0	-2.5	-1.2
Standard Deviation EPC	43.0	54.4	37.4	48.4
Coeff. of Var.	3.6	4.5	3.8	4.2
Pearsonian Skewness	0.7	0.8	1.0	0.8
Third Moment	3.57	4.10	0.94	3.99
Excess Price Change (DJIA)				
Mean Excess Price Change	11.6	11.7	8.9	11.1
Median Excess Price Change	1.7	-2.6	-4.3	-1.2
Standard Deviation EPC	43.2	54.7	36.9	48.6
Coeff. of Var.	3.7	4.7	4.1	4.4
Pearsonian Skewness	0.7	0.8	1.0	0.8
Third Moment	3.53	4.05	0.98	3.95

TABLE 8

PERCENT PRICE CHANGES FOR NEW ISSUES AND MARKET INDICATOR SERIES FROM OFFERING TO YEAR AFTER QUOTE

	Complete Data Sample (N=228)	First Wednesday Price Missing (N=8)	Fourth Wednesday Price Missing (N=5)	All Available Data Sample (N=244)
ew Issues				
Mean Price Change	-28.3	-61.2	67.1	-26.0
Median Price Change	-38.9	-62.2	14.7	-38.0
Standard Deviation	44.4	14.9	98.4	50.3
Coeff. of Var.	1.6	0.2	1.5	1.9
Pearsonian Skewness	0.7	0.2	1.6	0.7
Third Moment	1.85	0.70	0.93	2.28
ASDAQ Industrial				
Mean Price Change	-22.7	-30.8	-17.5	-23.0
Median Price Change	-23.1	-29.3	-17.5	-23.2
Standard Deviation	10.1	7.0	0.1	10.0
Coeff. of Var.	0.4	0.2	0.0	0.4
Pearsonian Skewness	0.1	-0.6	0.0	0.1
Third Moment	0.91	-0.99	0.80	0.88
JIA				
Mean Price Change	-3.3	-12.8	-1.8	-3.6
Median Price Change	-2.3	-11.8	-1.7	-2.5
Standard Deviation	6.9	9.7	0.2	7.1
Coeff. of Var.	2.0	0.8	0.1	2.0
Pearsonian Skewness	-0.4	-0.3	-1.5	-0.5
Third Moment	-0.41	-0.70	-0.90	-0.56
xcess Price Change (NASDAQ)				
Mean Excess Price Change	-5.6	-30.4	84.6	-3.0
Median Excess Price Change	-13.9	-33.4	32.3	-13.8
Standard Deviation EPC	43.4	13.2	98.4	49.4
Coeff. of Var.	7.8	0.4	1.2	16.5
Pearsonian Skewness	0.6	0.7	1.6	0.7
Third Moment	1.96	0.63	0.93	2.40
xcess Price Change (DJIA)				
Mean Excess Price Change	-25.1	-48.4	68.9	-22.4
Median Excess Price Change	-33.3	-49.7	16.3	-33.3
Standard Deviation EPC	44.0	12.6	98.4	49.9
Coeff. of Var.	1.8	0.3	1.4	2.2
Pearsonian Skewness	0.6	0.3	1.6	0.7
Third Moment	1.92	-0.23	0.93	2.36

TABLE 9

PERCENT PRICE CHANGES FOR NEW ISSUES AND MARKET INDICATOR SERIES FROM FIRST WEDNESDAY TO FOURTH WEDNESDAY AFTER OFFERING

	Complete Data Sample (N=228)	No Year After Quote Sample (N=232)	All Available Data Sample (N=460)
New Issues			
Mean Price Change	1.7	9.0	5.4
Median Price Change	-1.8	-3.2	-2.4
Standard Deviation	33.0	136.0	99.3
Coeff. of Var.	19.4	15.1	18.4
Pearsonian Skewness	0.3	0.3	0.2
Third Moment	5.70	13.16	17.22
NASDAQ Industrial			
Mean Price Change	0.2	0.3	0.2
Median Price Change	-0.6	-0.5	-0.6
Standard Deviation	3.7	3.8	3.7
Coeff. of Var.	18.5	12.7	18.5
Pearsonian Skewness	0.6	0.6	0.6
Third Moment	0.39	0.13	0.25
DJIA			
Mean Price Change	0.4	0.6	0.5
Median Price Change	0.0	0.4	0.3
Standard Deviation	2.5	2.5	2.5
Coeff. of Var.	6.3	4.2	5.0
Pearsonian Skewness	0.5	0.2	0.2
Third Moment	0.08	-0.01	0.04
Excess Price Change (NASDAQ)			
Mean Excess Price Change	1.5	8.7	5.1
Median Excess Price Change	-1.3	-4.2	-3.0
Standard Deviation EPC	32.5	136.1	99.3
Coeff. of Var.	21.7	15.6	19.5
Pearsonian Skewness	0.3	0.3	0.2
Third Moment	5.84	13.16	17.26
Excess Price Change (DJIA)			
Mean Excess Price Change	1.3	8.3	4.8
Median Excess Price Change	-2.3	-3.8	-2.8
Standard Deviation EPC	32.7	136.2	99.3
Coeff. of Var.	25.2	16.4	20.7
Pearsonian Skewness	0.3	0.3	0.2
Third Moment	5.81	13.16	17.24

TABLE 10

PERCENT PRICE CHANGES FOR NEW ISSUES AND MARKET INDICATOR SERIES FROM FIRST AND FOURTH WEDNESDAY TO YEAR AFTER QUOTE

	FIRST WEDNESDAY		FOURTH WEDNESDAY	
	Complete Data Sample (N=228)	All Available Data Sample (N=233)	Complete Data Sample (N=228)	All Available Data Sample (N=236)
ew Issues				
Mean Price Change	-34.3	-32.3	-32.0	-32.8
Median Price Change	-43.3	-42.9	-43.2	-44.8
Standard Deviation	40.1	43.5	48.0	47.4
Coeff. of Var.	1.2	1.3	1.5	1.4
Pearsonian Skewness	0.7	0.7	0.7	0.8
Third Moment	2.05	2.24	3.26	3.31
ASDAQ Industrial				
Mean Price Change	-22.7	-22.6	-22.9	-23.1
Median Price Change	-21.7	-21.7	-22.2	-24.5
Standard Deviation	9.8	9.7	8.8	8.8
Coeff. of Var.	0.4	0.4	0.4	0.4
Pearsonian Skewness	-0.3	-0.3	-0.1	0.5
Third Moment	0.77	0.75	0.30	0.27
JIA				
Mean Price Change	-3.3	-3.3	-3.7	-4.0
Median Price Change	-2.6	-2.6	-2.9	-3.4
Standard Deviation	6.8	6.8	6.9	7.2
Coeff. of Var.	2.1	2.0	1.9	1.8
Pearsonian Skewness	-0.3	-0.3	-0.3	-0.3
Third Moment	-0.49	-0.49	-.91	-0.98
xcess Price Change (NASDAQ)				
Mean Excess Price Change	-11.6	-9.7	-9.1	-9.7
Median Excess Price Change	-19.9	-19.5	-19.0	-19.9
Standard Deviation EPC	39.5	42.7	47.6	46.9
Coeff. of Var.	3.4	4.4	5.2	4.8
Pearsonian Skewness	0.6	0.7	0.6	0.7
Third Moment	2.11	2.29	3.26	3.33
xcess Price Change (DJIA)				
Mean Excess Price Change	-31.0	-29.0	-28.3	-28.8
Median Excess Price Change	-38.5	-37.7	-39.1	-39.4
Standard Deviation EPC	40.0	43.4	48.2	47.5
Coeff. of Var.	1.3	1.5	1.7	1.6
Pearsonian Skewness	0.6	0.6	0.7	0.7
Third Moment	2.06	2.25	3.16	3.23

TABLE 11

SHORT-RUN PRICE CHANGES FOR NEW ISSUES OFFERED
DURING RISING MARKET - 1972. ALL AVAILABLE DATA

	Offering to First Wednesday (N=435)	Offering to Fourth Wednesday (N=430)	First Wednesday Fourth Wednesday (N=413)
New Issues			
Mean Price Change	12.1	14.0	6.6
Median Price Change	2.3	0.0	-2.1
Standard Deviation	33.2	51.0	104.7
Coeff. of Var.	2.7	3.6	15.9
Pearsonian Skewness	0.9	0.8	0.2
Third Moment	2.57	3.71	16.35
NASDAQ Industrial			
Mean Price Change	0.1	0.6	0.5
Median Price Change	0.0	0.2	-0.5
Standard Deviation	1.5	3.8	3.6
Coeff. of Var.	15.0	6.3	7.2
Pearsonian Skewness	0.2	0.3	0.8
Third Moment	0.43	0.16	0.30
DJIA			
Mean Price Change	0.1	0.7	0.7
Median Price Change	0.0	0.9	0.4
Standard Deviation	1.2	2.5	2.4
Coeff. of Var.	12.0	3.6	3.4
Pearsonian Skewness	0.3	-0.2	0.4
Third Moment	-0.01	0.02	0.03
Excess Price Change (NASDAQ)			
Mean Excess Price Change	12.0	13.4	6.1
Median Excess Price Change	2.2	-0.8	-2.9
Standard Deviation EPC	33.1	50.8	104.6
Coeff. of Var.	2.8	3.8	17.1
Pearsonian Skewness	0.9	0.8	0.3
Third Moment	2.54	3.78	16.39
Excess Price Change (DJIA)			
Mean Excess Price Change	11.9	13.2	6.0
Median Excess Price Change	2.4	-0.7	-2.6
Standard Deviation EPC	33.1	51.0	104.7
Coeff. of Var.	2.8	3.9	17.4
Pearsonian Skewness	0.9	0.8	0.2
Third Moment	2.54	3.75	16.37

TABLE 12

SHORT-RUN PRICE CHANGES FOR NEW ISSUES OFFERED
DURING DECLINING MARKET-1973-74. ALL AVAILABLE DATA

	Offering to First Wednesday (N=51)	Offering to Fourth Wednesday (N=55)	First Wednesday to Fourth Wednesday (N=47)
ew Issues			
Mean Price Change	0.4	-6.5	-5.7
Median Price Change	-0.9	-8.3	-3.7
Standard Deviation	11.5	14.8	12.5
Coeff. of Var.	28.8	-2.3	-2.2
Pearsonian Skewness	0.3	0.4	-0.5
Third Moment	0.260	0.774	1.714
ASDAQ Industrial			
Mean Price Change	-1.0	-3.8	-2.5
Median Price Change	-0.9	-5.1	-3.4
Standard Deviation	2.1	4.4	3.9
Coeff. of Var.	-2.1	-1.2	1.6
Pearsonian Skewness	-0.1	0.9	0.7
Third Moment	0.006	1.484	0.764
JIA			
Mean Price Change	-0.4	-1.4	-0.7
Median Price Change	-0.3	-2.5	-1.4
Standard Deviation	2.1	3.7	3.2
Coeff. of Var.	-5.3	-2.6	-4.6
Pearsonian Skewness	-0.1	0.9	0.7
Third Moment	0.193	1.425	0.596
xcess Price Change (NASDAQ)			
Mean Excess Price Change	1.4	-2.7	-3.1
Median Excess Price Change	1.5	-6.1	-4.8
Standard Deviation EPC	11.5	14.8	13.0
Coeff. of Var.	8.2	-5.5	-4.2
Pearsonian Skewness	0.0	0.7	0.4
Third Moment	0.200	0.733	1.619
Excess Price Change (DJIA)			
Mean Excess Price Change	0.7	-5.1	-5.0
Median Excess Price Change	0.5	-8.6	-5.2
Standard Deviation EPC	11.7	14.7	12.5
Coeff. of Var.	16.7	-2.9	-2.5
Pearsonian Skewness	0.1	0.7	0.0
Third Moment	0.195	0.796	1.566

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